

FIG. 1A

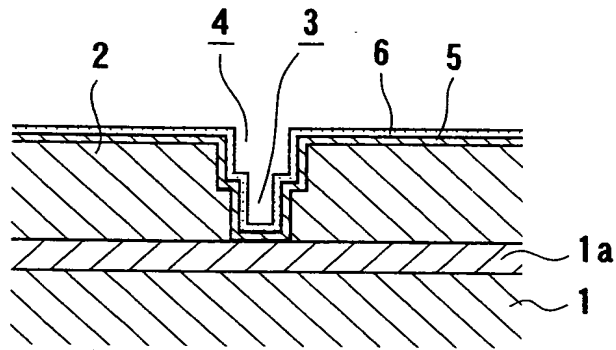


FIG. 1B

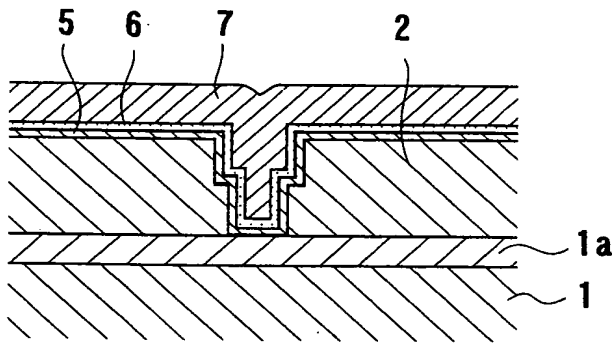
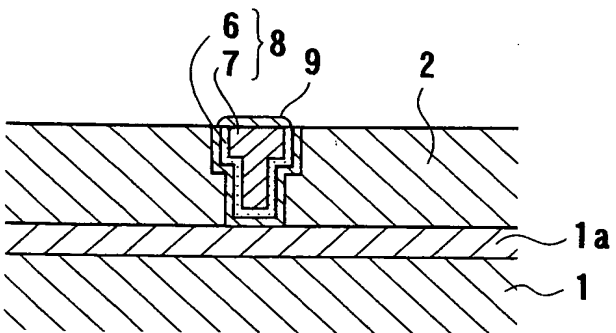


FIG. 1C



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FIG. 2

relationship between pH of plating liquid and electroless Ni-B plating rate, and between pH of plating liquid and B content of plating film (pH adjusted with ammonia water)

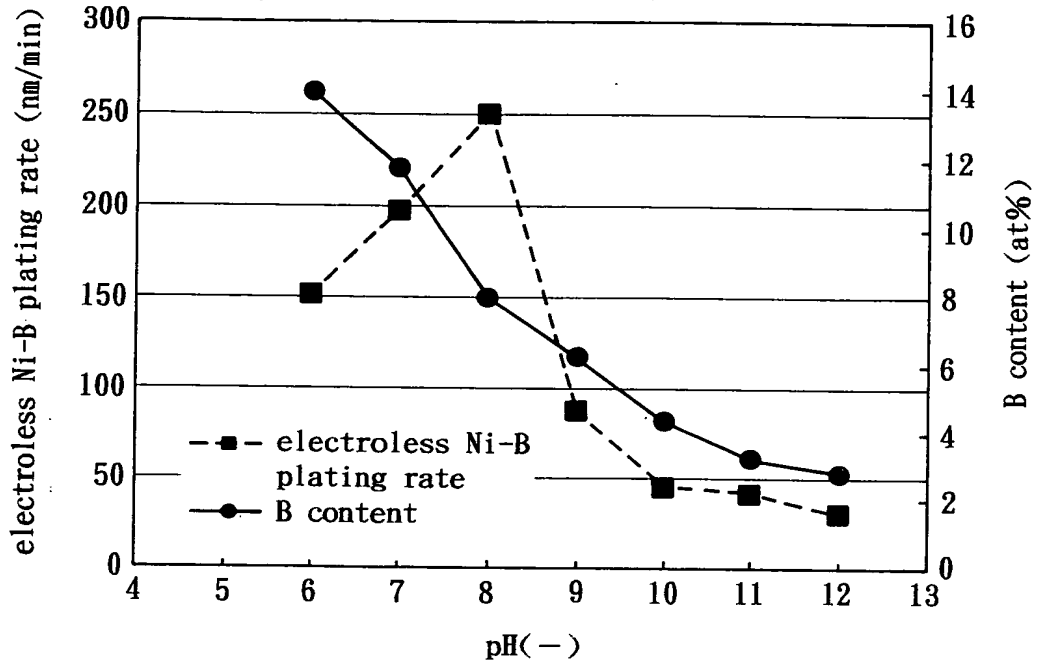
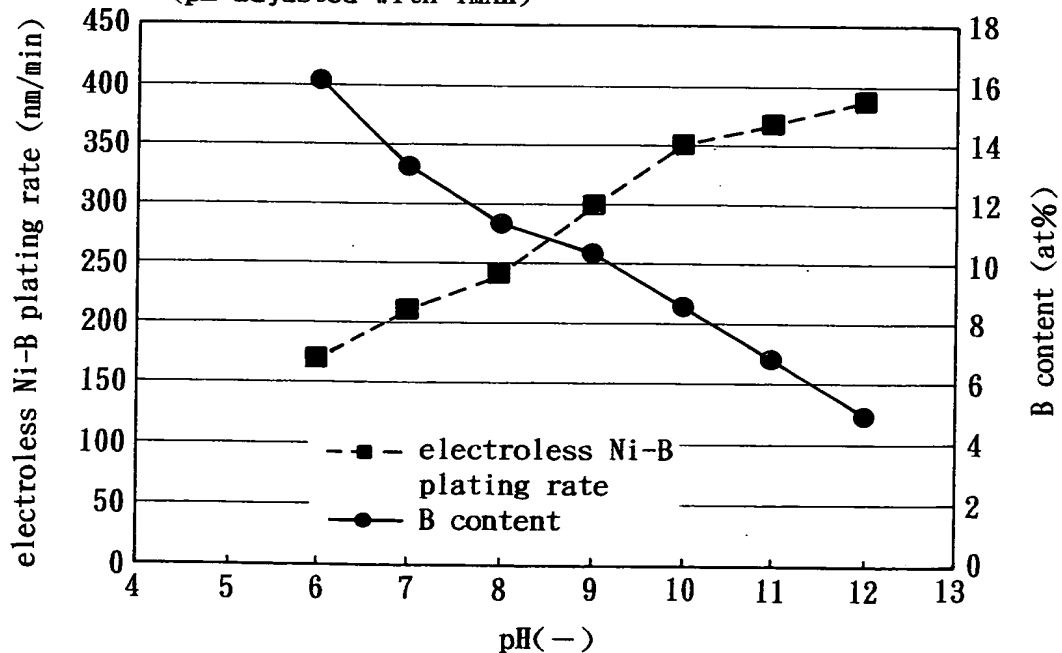


FIG. 3

relationship between pH of plating liquid and electroless Ni-B plating rate, and between pH of plating liquid and B content of plating film (pH adjusted with TMAH)



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X-ray diffractometry

Ni-B/Ag/Cu/TiN
ag depo

incidence angle for thin film 5°

CuK α $\lambda = 1.54\text{\AA}$

FIG. 4A

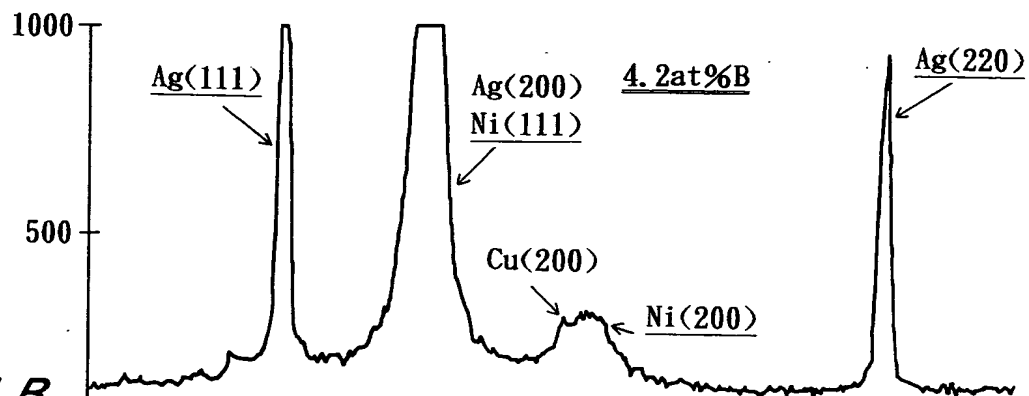


FIG. 4B

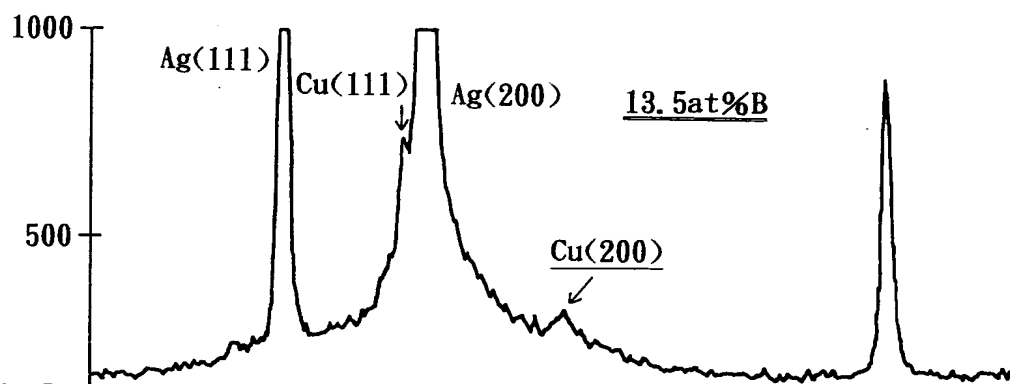
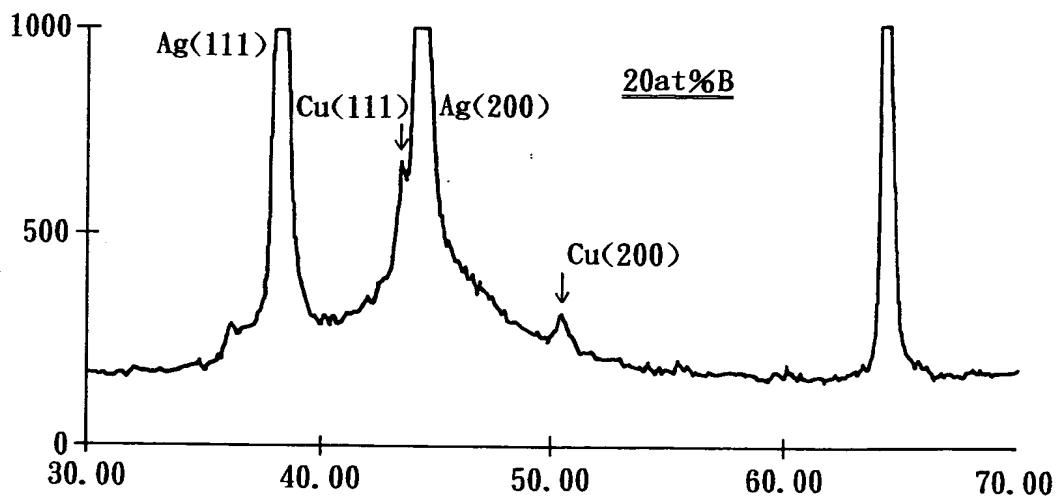


FIG. 4C



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X-ray diffractometry

Ni-B/Ag/Cu/TiN

incidence angle for thin film 5°

annealed for 50min
in Ar at 573K

CuK α $\lambda = 1.54\text{\AA}$

FIG. 5A

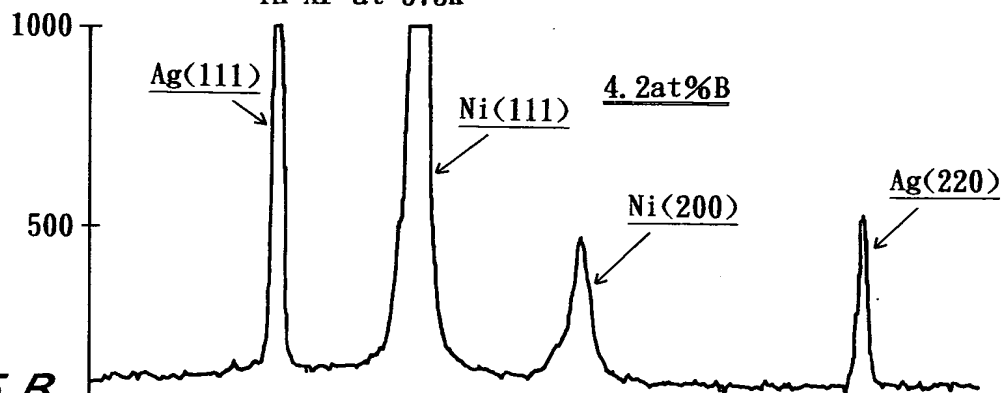


FIG. 5B

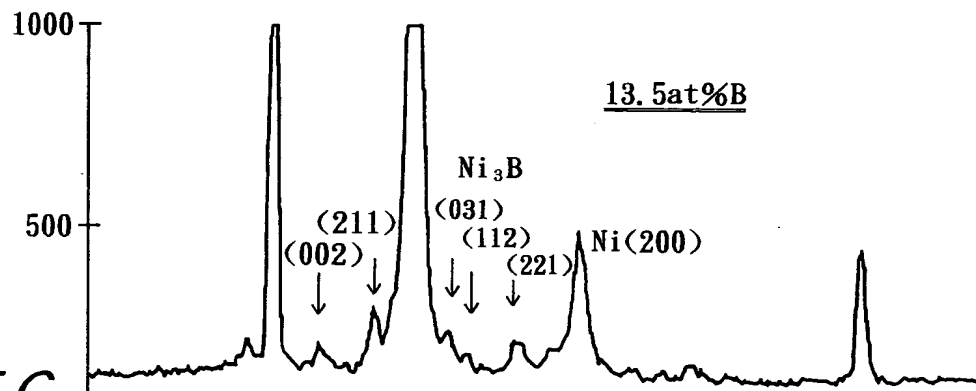
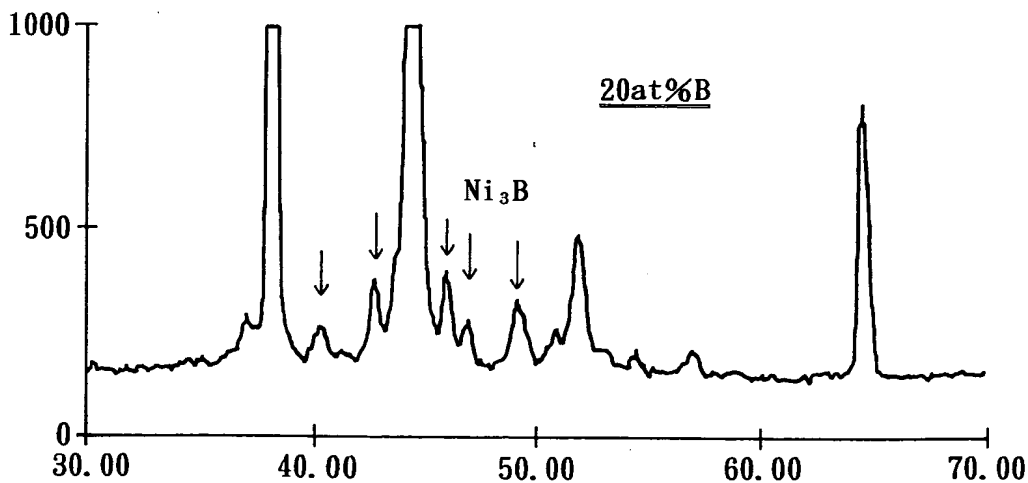


FIG. 5C



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FIG. 6A

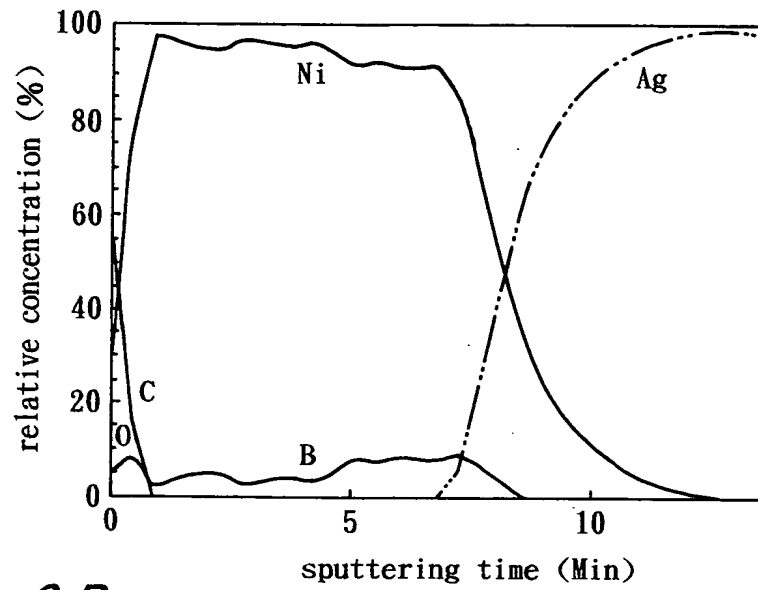


FIG. 6B

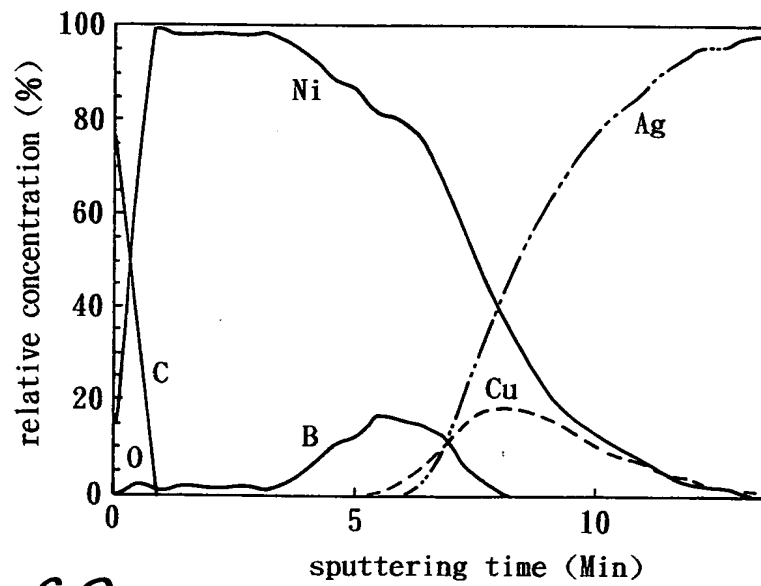
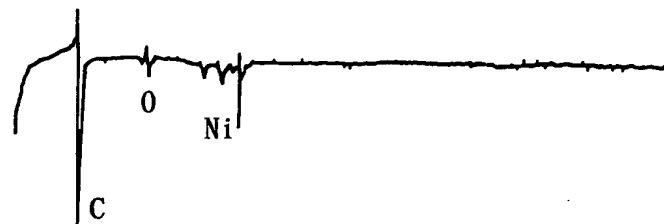


FIG. 6C



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FIG. 7A

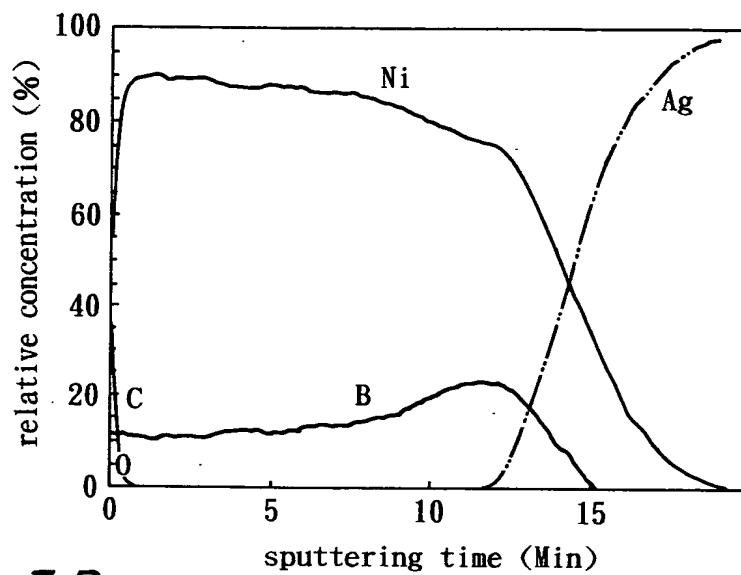


FIG. 7B

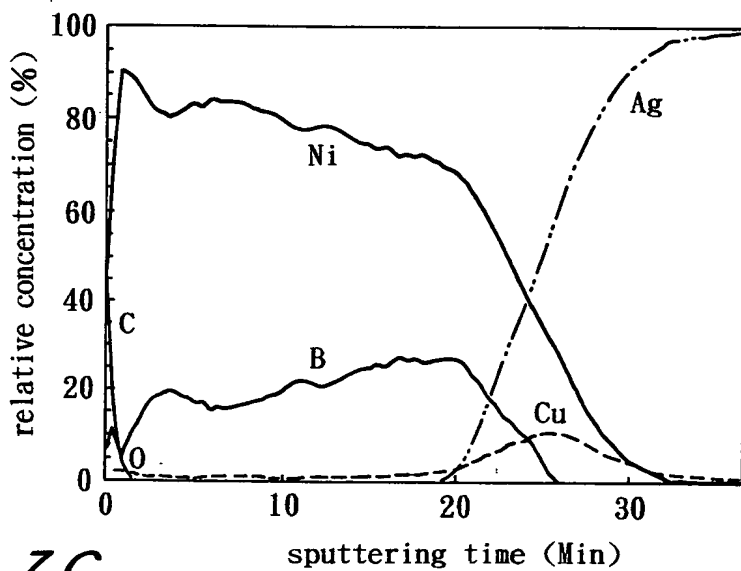
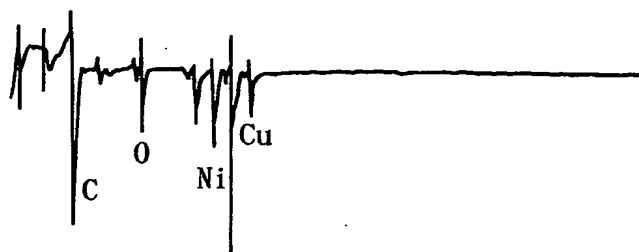


FIG. 7C



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FIG. 8

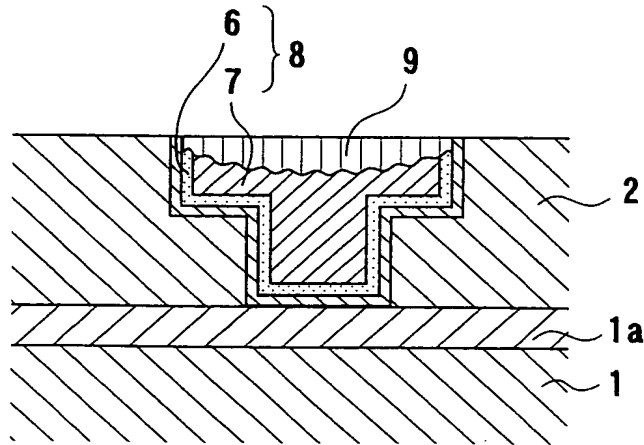
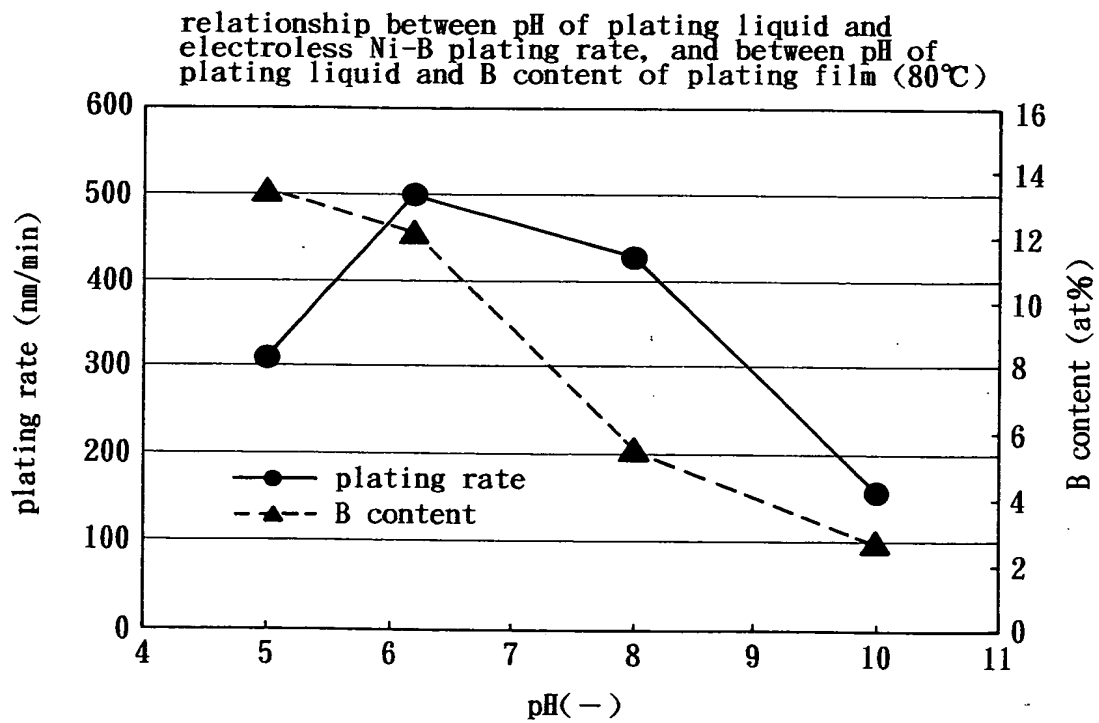


FIG. 9



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FIG. 10

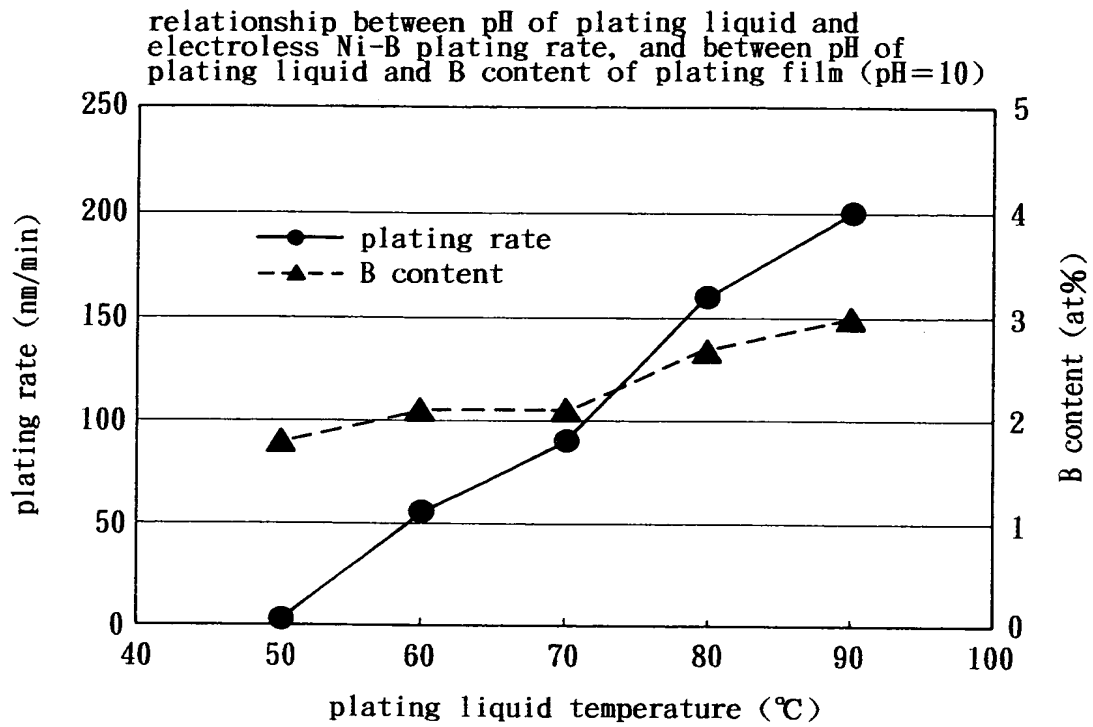


FIG. 11A

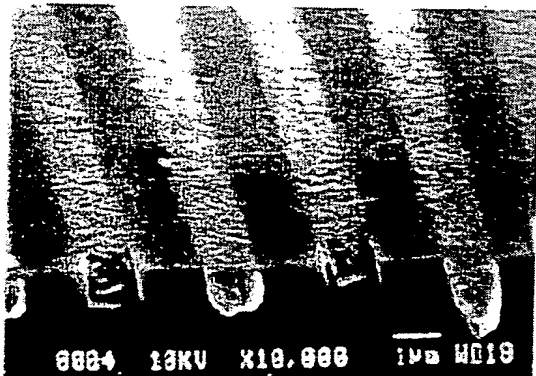
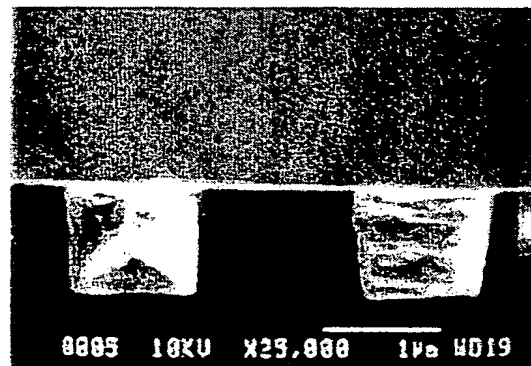


FIG. 11B



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FIG. 12A

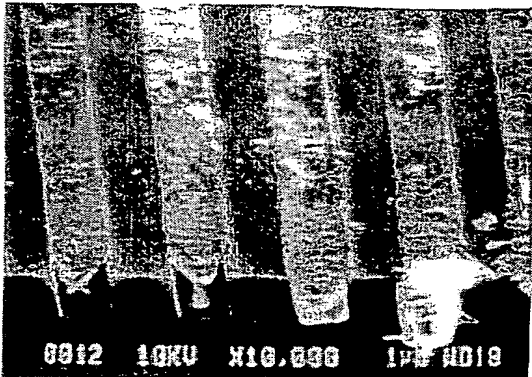


FIG. 12B

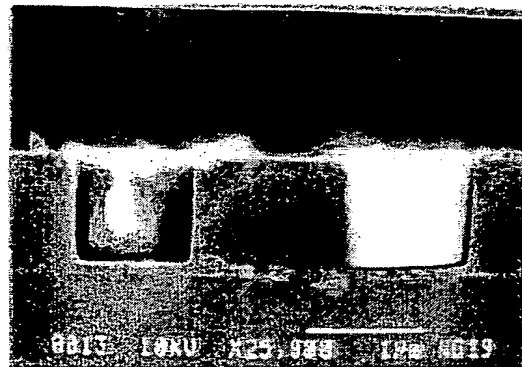


FIG. 13

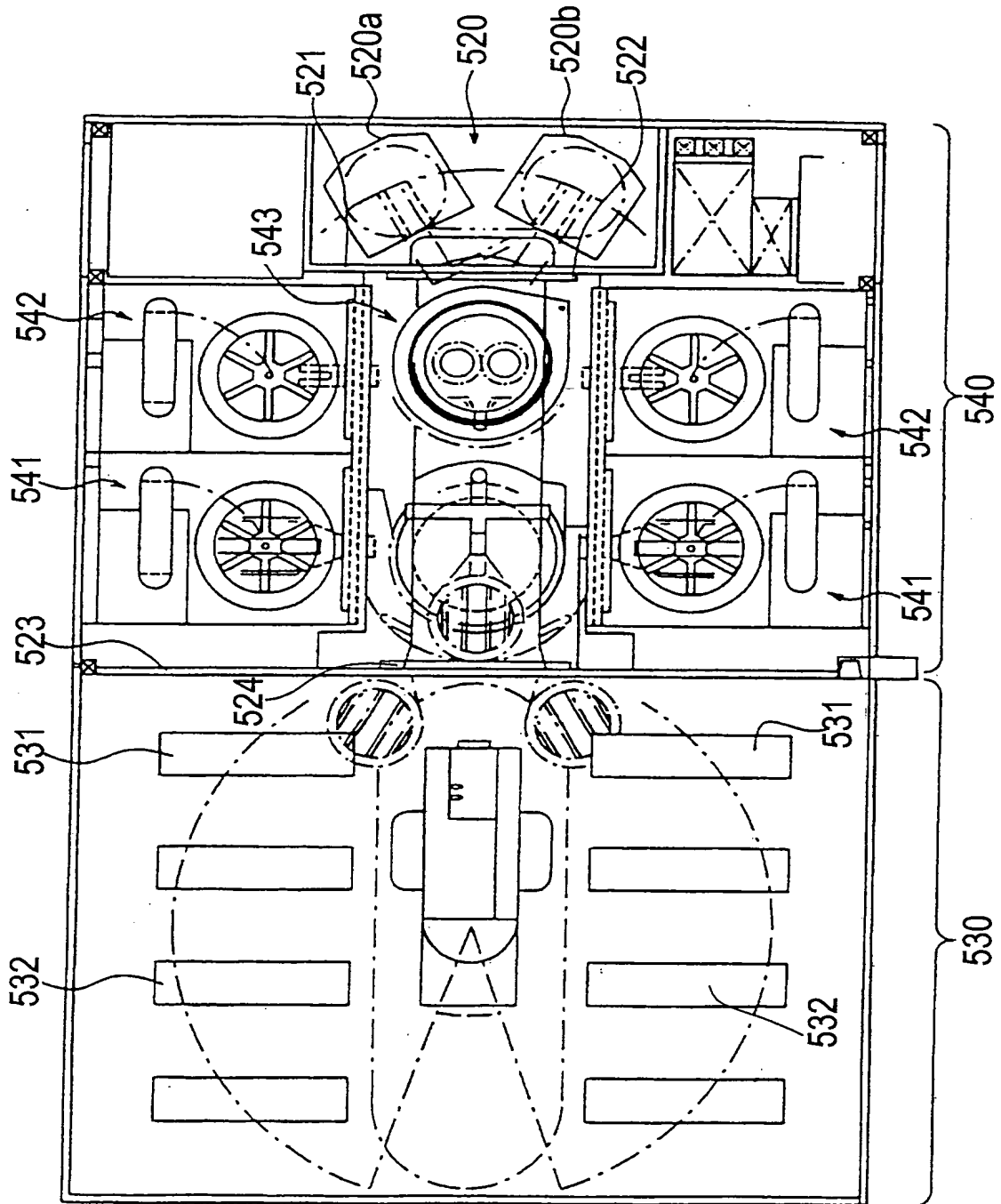


FIG. 15

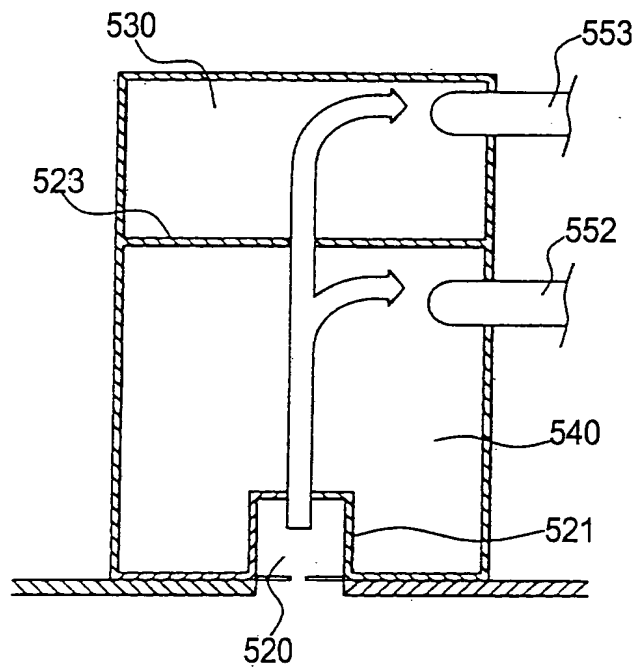


FIG. 16

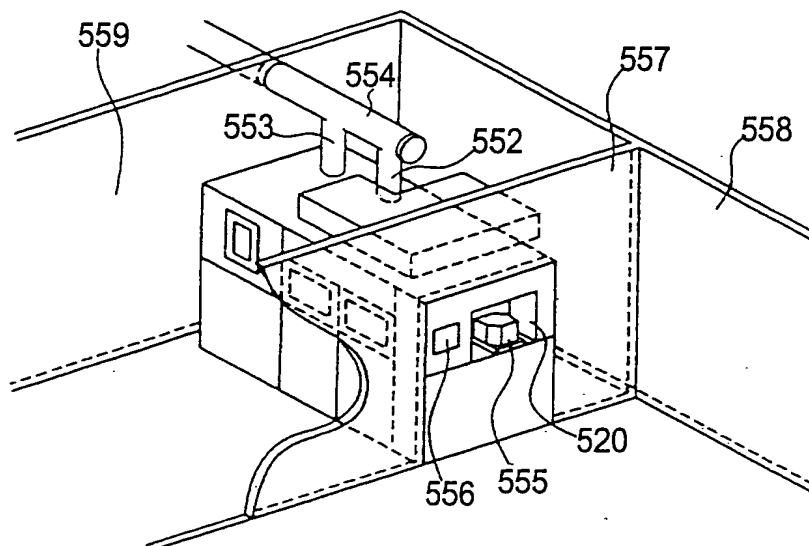


FIG. 17

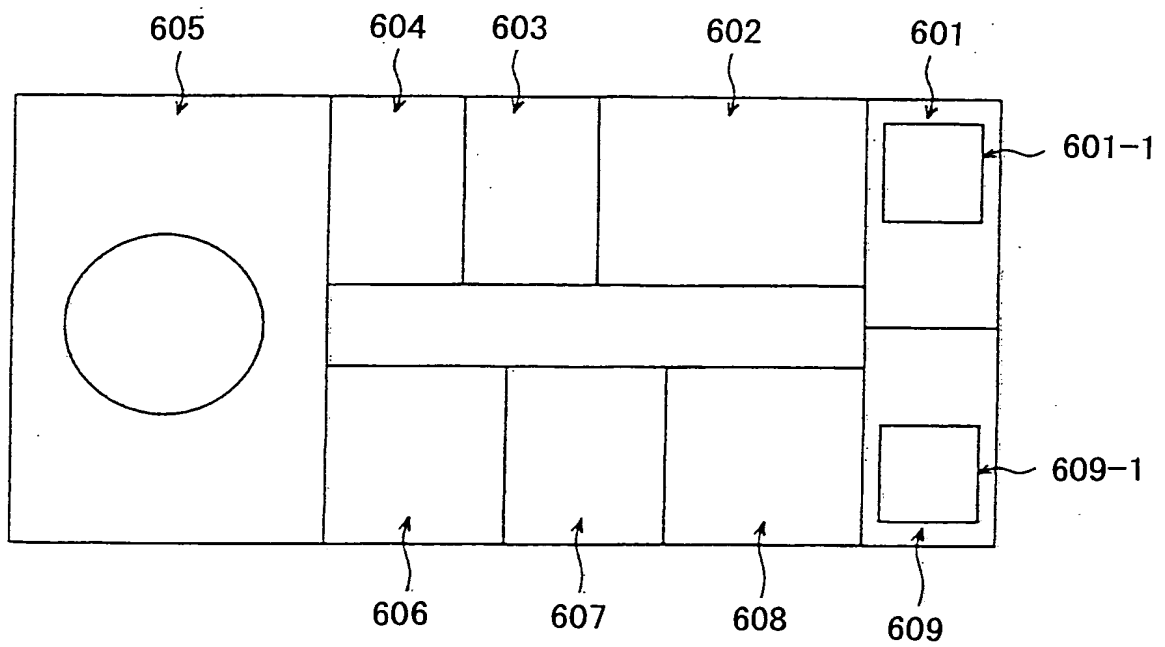


FIG. 18

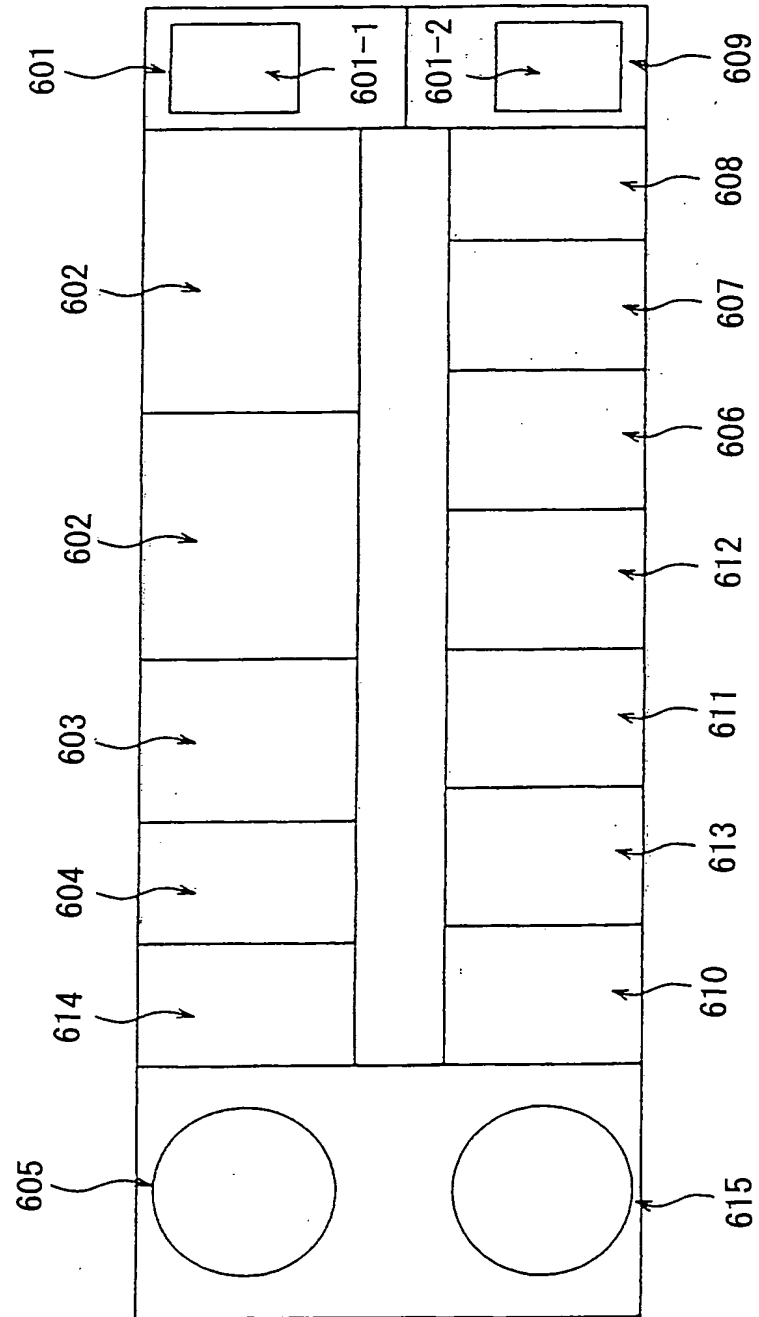


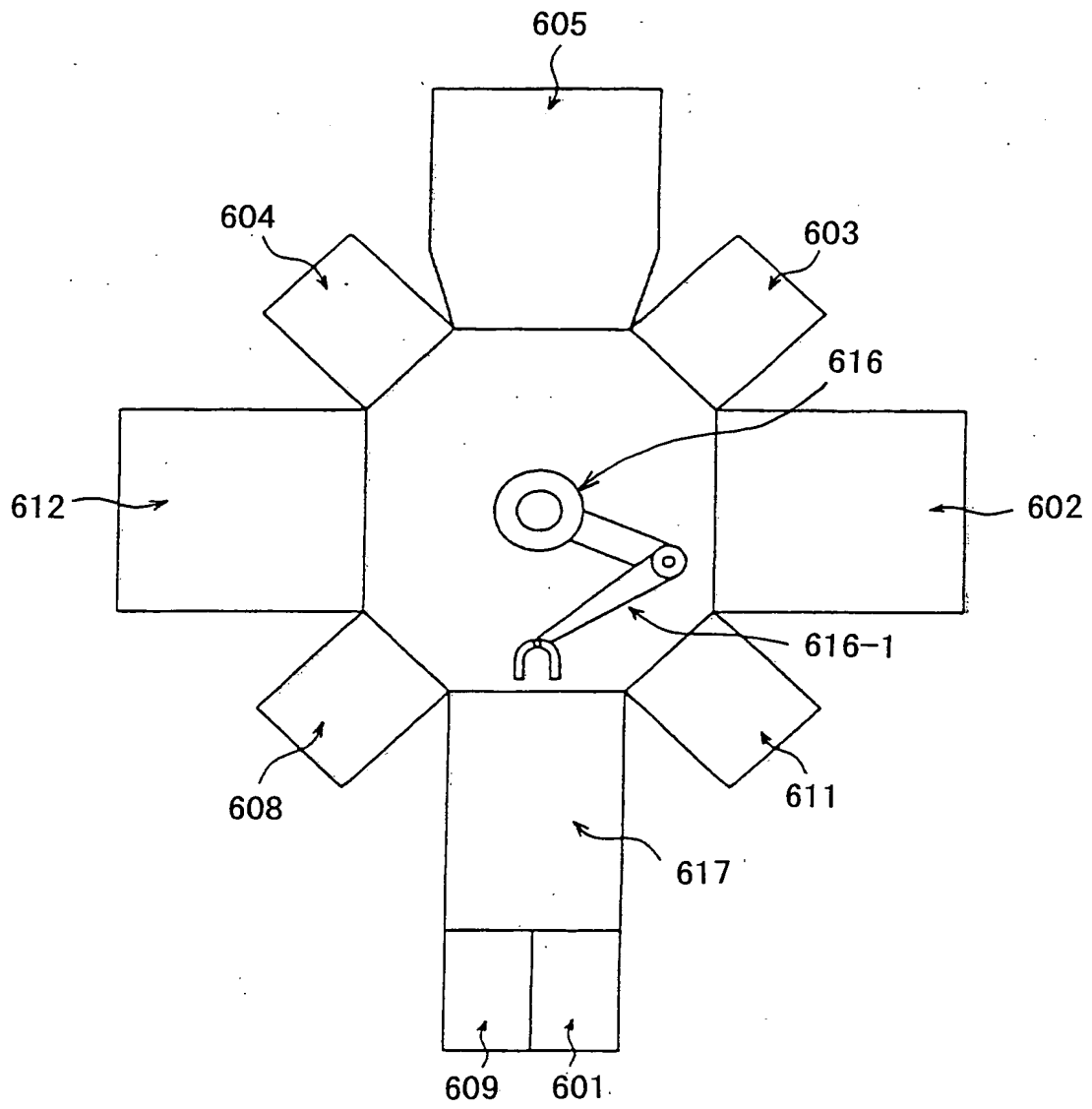
FIG. 19

FIG. 20

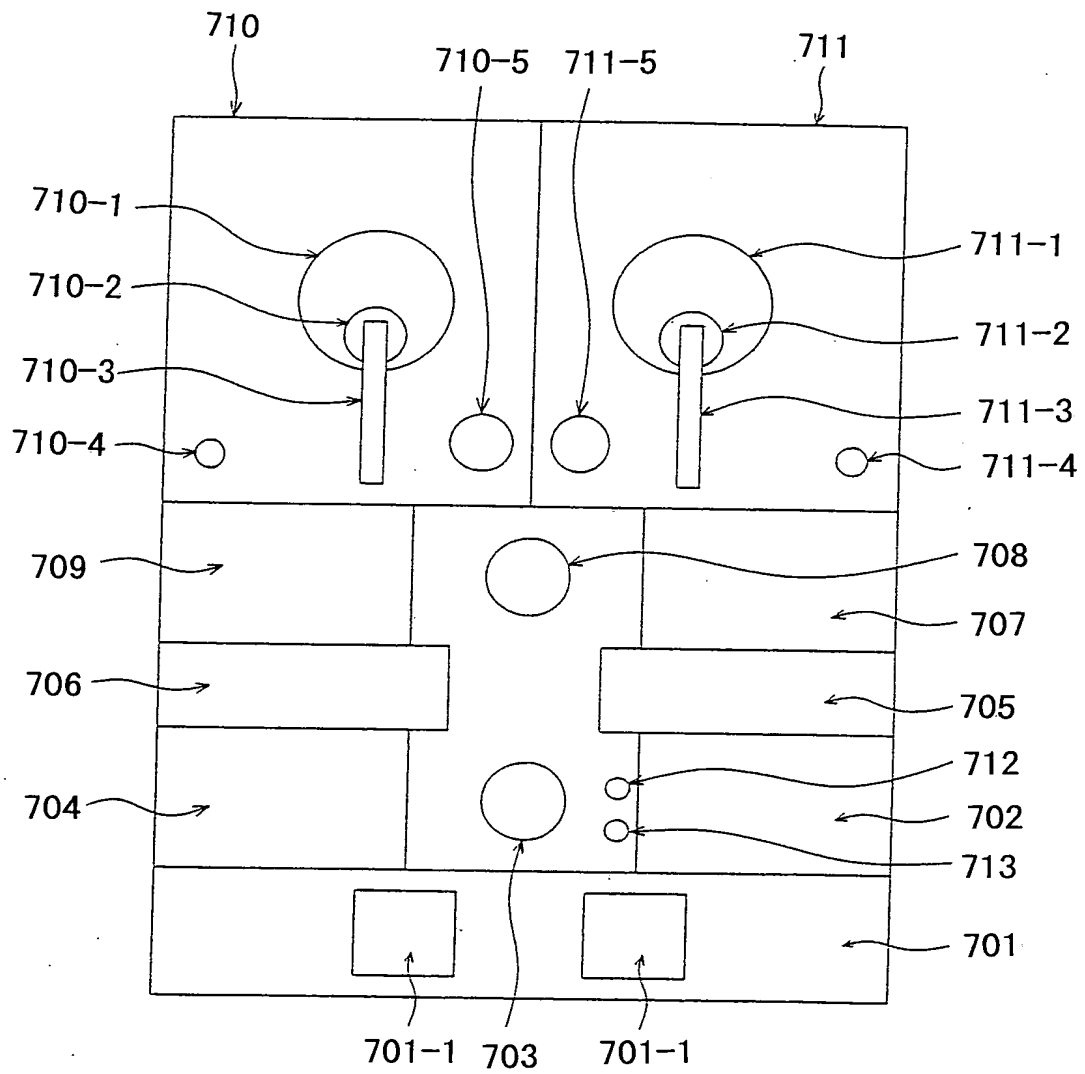


FIG. 21

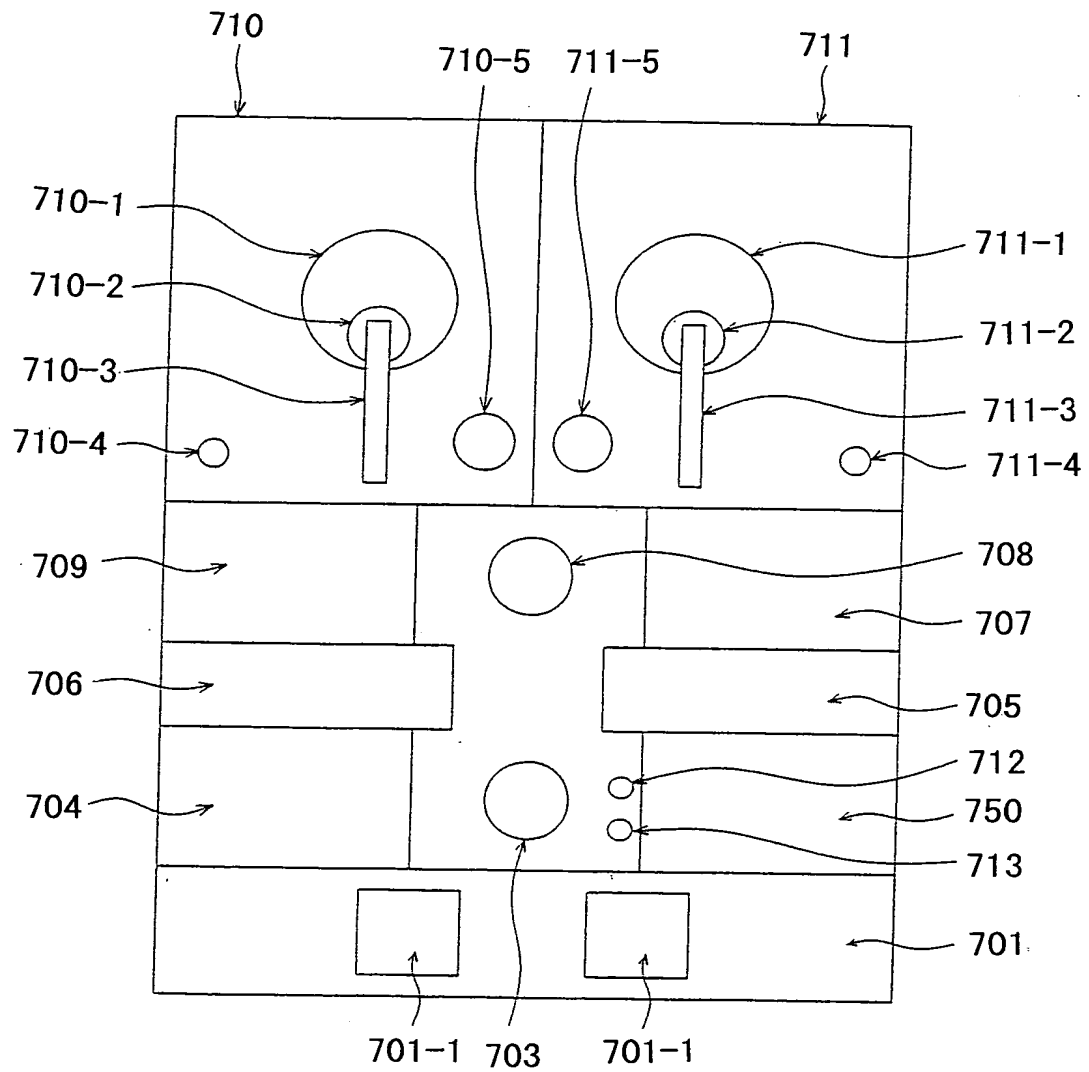


FIG. 22

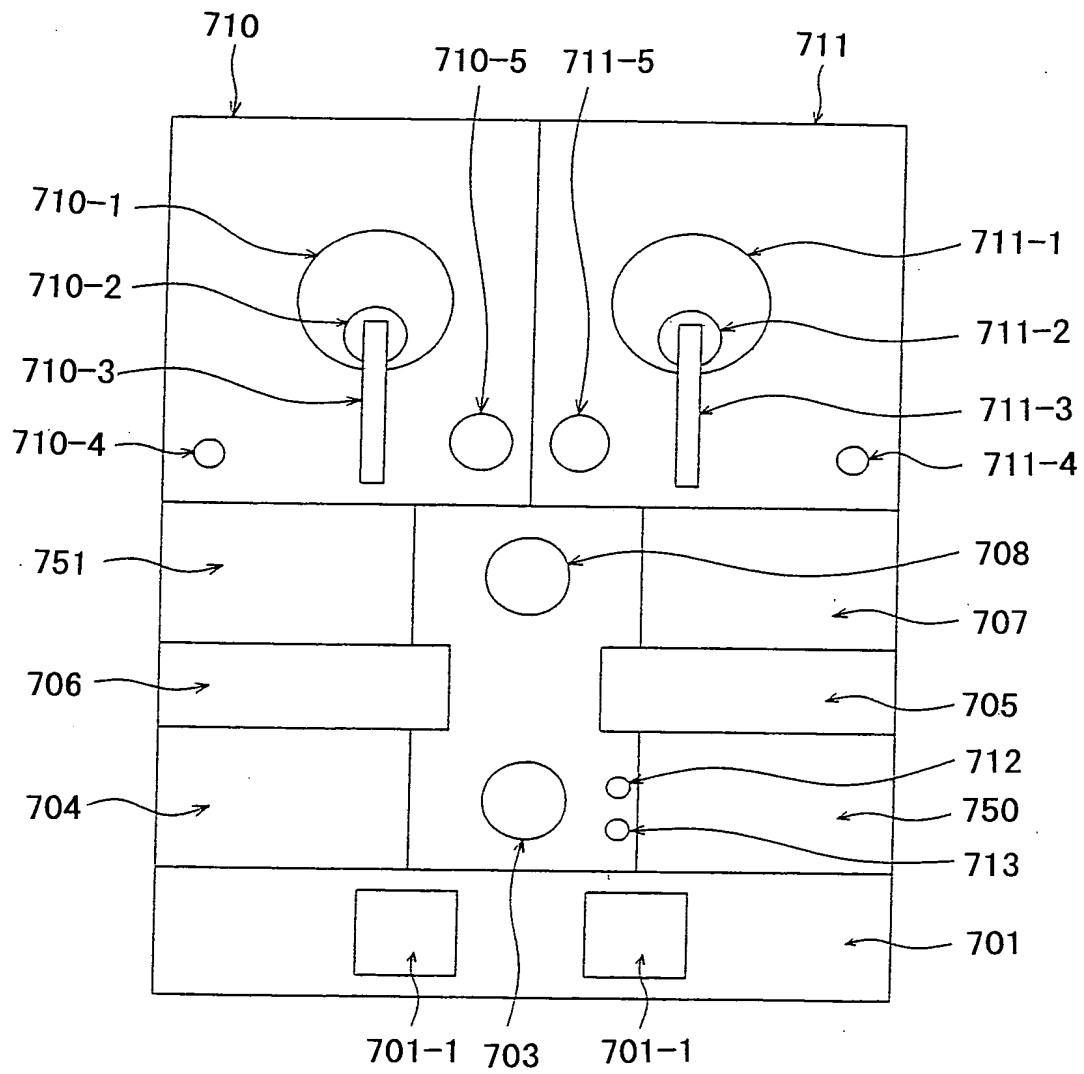


FIG. 23

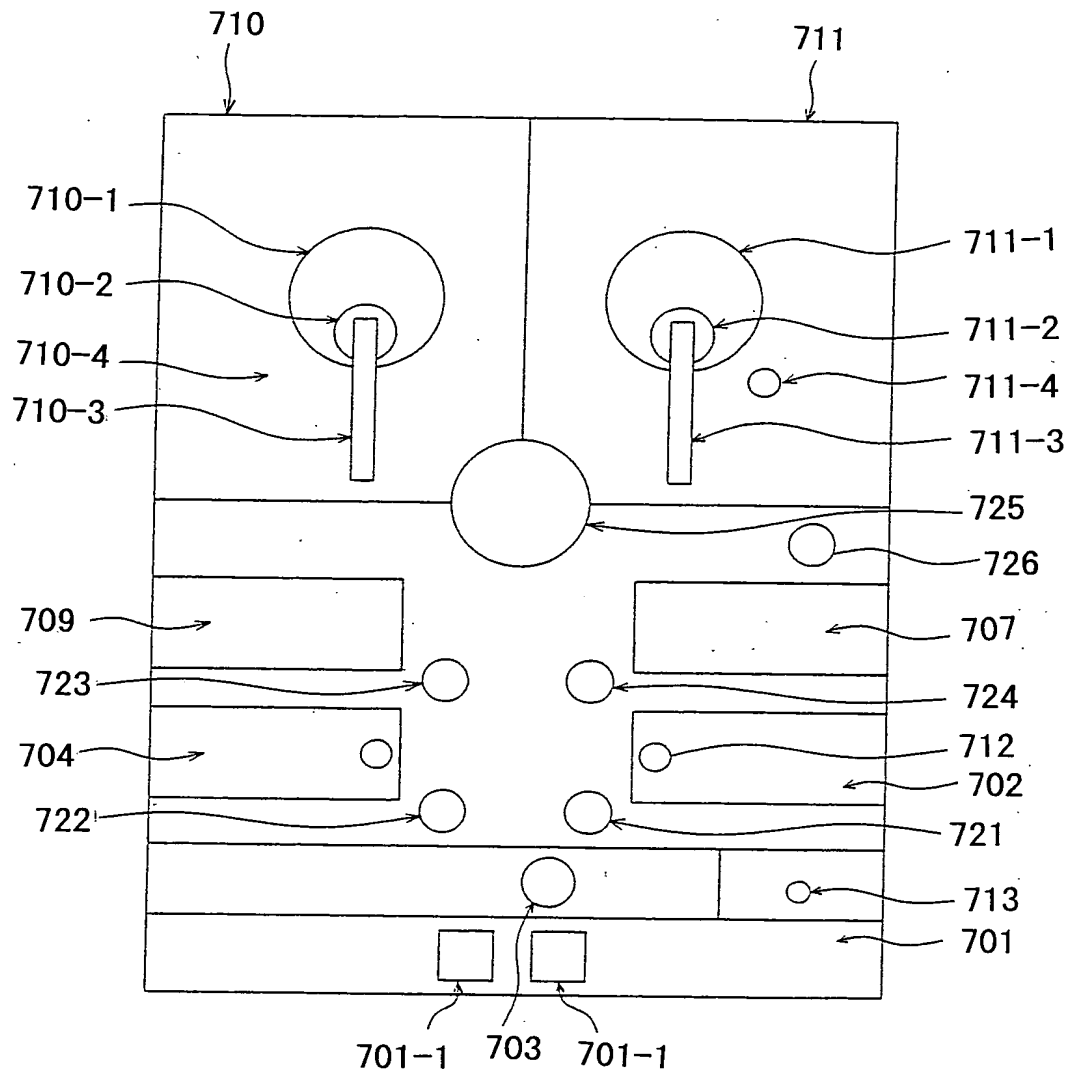


FIG. 24

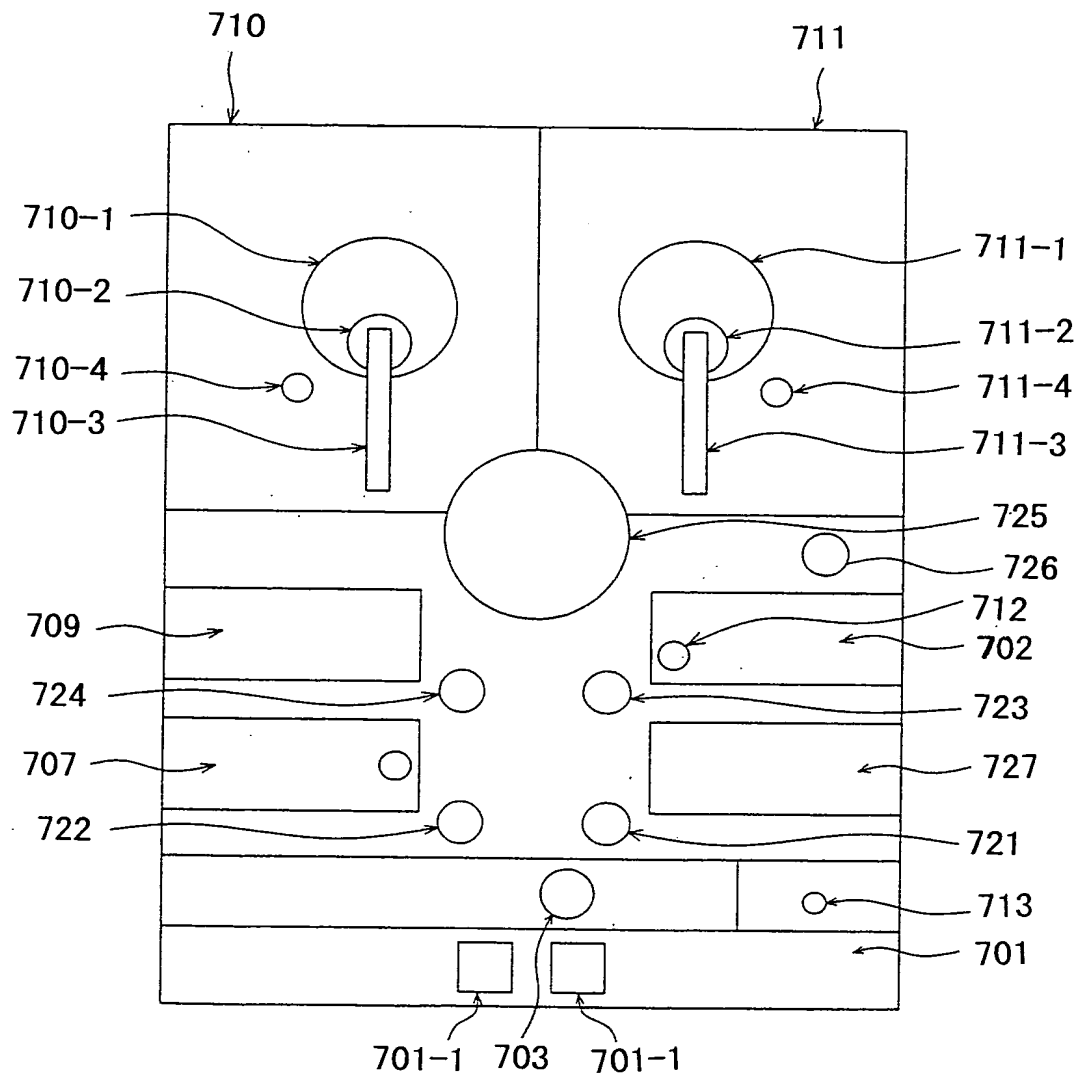


FIG. 25

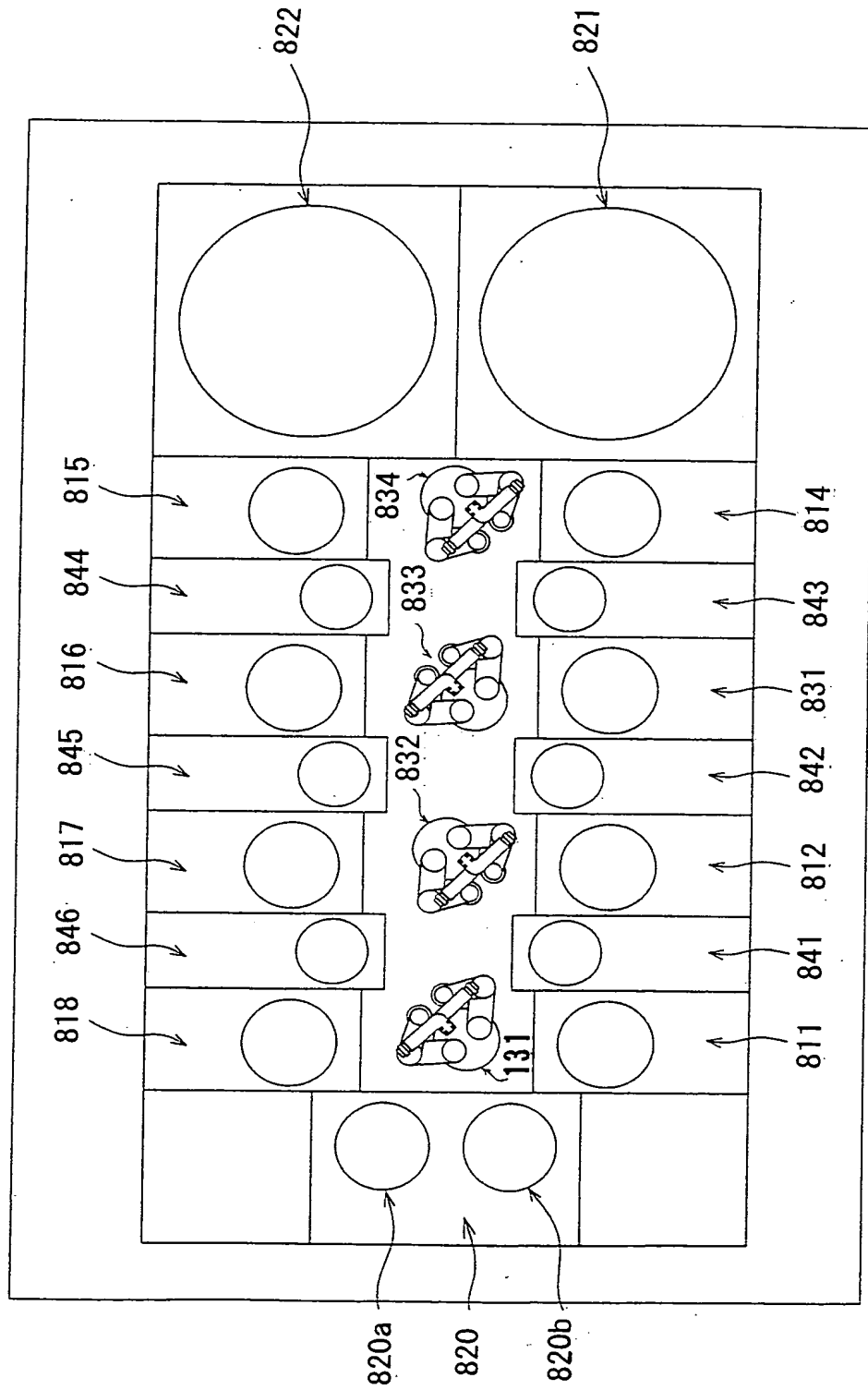


FIG. 26

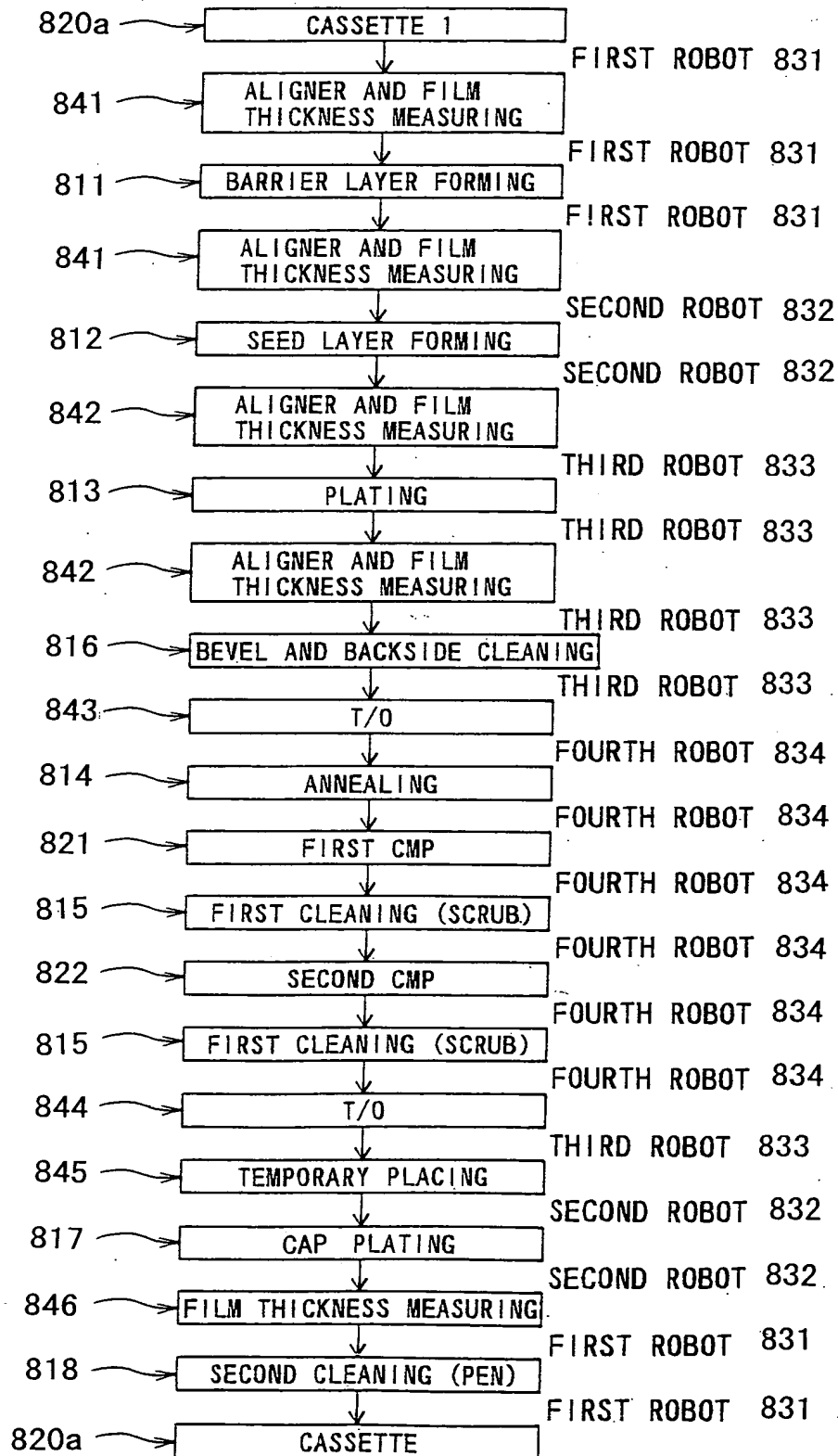


FIG. 28

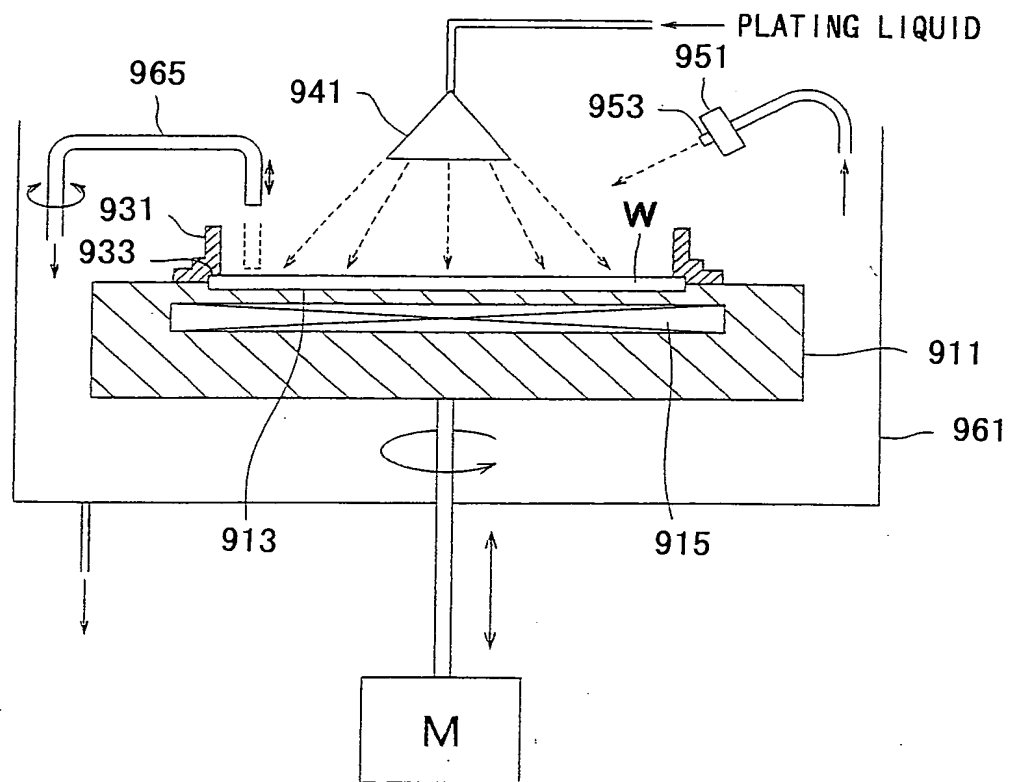


FIG. 29

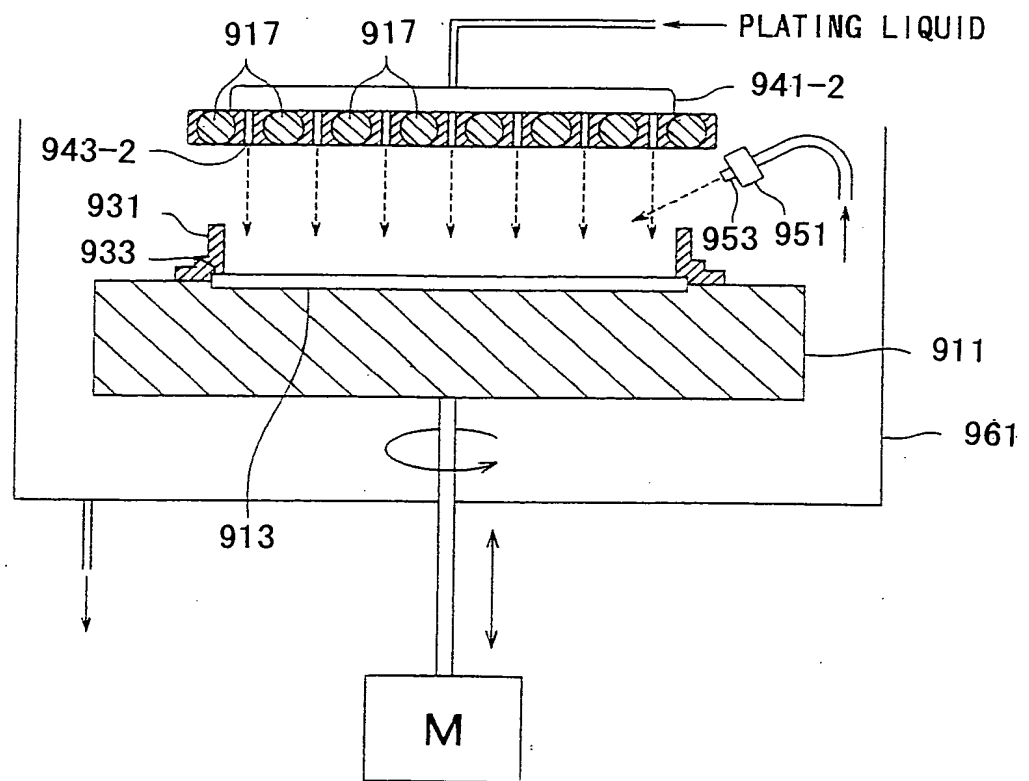


FIG. 30

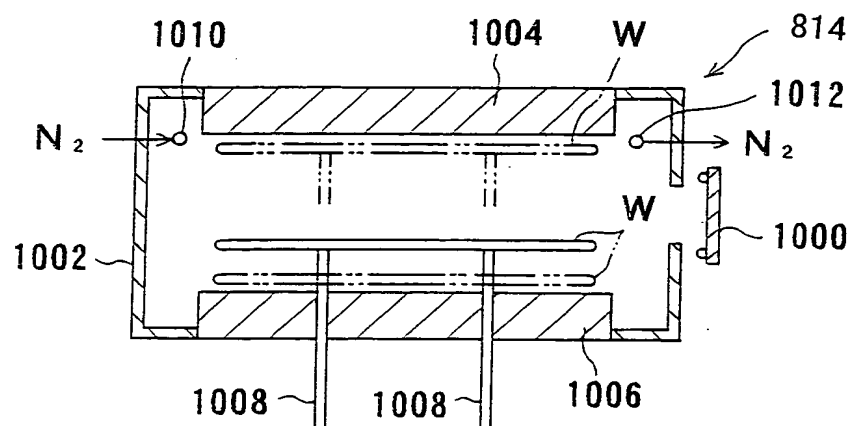


FIG. 31

